

Model: 615

Troubleshooting Aids

NOTE: Visual inspection is critical in this unit. The upright position of many of the components used on the board can create problems. It is possible for them to be shorted to the shield or to each other. Make sure they are evenly spaced and do not contact the shield.

1) NO VIDEO - Absolutely no video on screen

A) Check for 5 volts

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|------|---------|--|
| O.K. | If not: | 1) Check fuse |
| | | 2) Check for twisted or bent caps (5 V. short to ground) |
| | | 3) Check U1 |
| | | 4) Check 5 V. regulator |
| | | 5) Check if top shield shorts to + 5 V. (brown label) |
| | | 6) Check if top shield is shorting 5 V. to ground |

B) Check for oscillation at pin 14 of U1

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|------|---------|--|
| O.K. | If not: | 1) Check for good connection at pin 14 of U1 |
| | | 2) Check for good connection at U1 thru R7 |

C) Check for UBM signal at pin 21 of U1, at pin 8 of the modulator, at pin 8 of the modulator, at R10 and at pin 1 of C10

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|------|---------|---|
| O.K. | If not: | 1) Check for UBM signal shorted to ground |
| | | 2) Check for open traces |
| | | 3) Check Modulator |

D) Check for reset

O.K.

B

E) Check for control signals

Signal	I.C.	Pin	Signal	I.C.	Pin
ABC	U1	20	R/Y	U1	7
ABD	U1	4	G	U1	12
C&B	U1	13	PRC	U1	9
C&I	U1	8	TRQ	U1	6
C&L	U1A	15	SPV	U2	3
C&O	U1	5	SA	U1	14
C&P	U1A	3	P&B	U1	10

2) **RGB TIMING** - Burbling lines on screen - Random blocks on screen - Blurred display

- A) Check E1 for proper operation
 - O.K. If not: 1) Check socket for good solder
 - 2) Check for bad U1
- B) Check A5 for proper operation
 - O.K. If not: 1) Check socket
 - 2) Check for bad U2
- C) Check RAM data lines for correct amplitude
 - O.K. If not: 1) Check for bad surface of RAM
 - 2) Jump out RAM to verify
- D) Check multipliers R7, R8 - signals at RPI and RPI should be similar in frequency and amplitude
 - O.K. If not: 1) Suspect R7 or R8
- E) Check ROM for chip select signal at pin 28 of U3 and U4
 - O.K. If not: 1) Check for signal generation at U14
- F) Check that all ROM addresses are present and correct amplitude
 - O.K. If not: 1) Test problem address A0-A15
- G) Check E16, U1, U4 by replacement with known good

3) **NO POWER**

- A) Verify voltage +5 and +9 volts
 - 1) Check for shorts to ground
 - 2) Check switch
 - 3) Check power supply

4) **RGB BASIC** - Random characters on screen - Random colors - Power-up message is missing

- A) Check Basic ROM U1
- B) Check A Data 2 above IRM video

5) NO COLOR OR BAD COLOR

- A) Check U1 pin 14 for 14.31818 MHz with frequency counter
 O.K. If not: 1) Check solder joints of C81 and adjust for correct frequency
 2) Check crystal, C4 and C5
 3) Check clock circuit for opens or shorts
- B) Check U1 pin 13 for Color dot signal.
 O.K. If not: 1) Swap U1 w/known good
- C) Check modulator M1 pin 5 for Color In signal and pin 4 for Color Out signal
 O.K. If not: 1) Check M1 operation
- D) Check R81 and Q81 pin 4 to see if color signal is present.
 1) Check for shorts

6) NO SOUND OR BAD SOUND

- A) Check U1 pin 21 for SMO signal
 O.K. If not: 1) Check socket for open circuit
 2) Swap U1 w/known good
- B) Check audio circuit for short to ground or loss of signal.
 O.K. If not: 1) Check Q5 - Be sure emitter and base are not shorted to 5 V.
- C) Check modulator M1 pin 1 for SMO signal
 1) Adjust L.P. can (top right of modulator) for clean, loud volume
 2) M1 pin 2 to ground should read approximately 480 ohms
 3) Check M1 for component failure

7) SERIAL FAILURES

- A) Check PB14-19 for shorts to shield or each other (has caused serial port problems)
- B) Check PB16 for shorts to shield or each other
- C) Check PB, Q2 and Q81